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To illustrate its activity in its search for food may be quoted the story of the ingenious traveler who, in order to keep bed-bugs out of his bed, set the legs of the bedstead in pans of water, whereupon the bed-bugs climbed the walls, got out on the ceiling over the bed and dropped down upon the victim. In order to thwart his enemies the traveler was obliged to raise his umbrella.

As this is not marked as a joke, and is no more so than the other statements, we may expect to see it quoted as from good authority.

Much important information regarding the bed-bug has been published by the Bureau of Entomology, and one is surprised that so many interesting and valuable facts should have escaped the attention of Dr. Howard and Dr. Marlatt and their capable assistants. It is regrettable that the information contained in the article before us was not shared with them before it was printed in a government periodical, which the public is entitled to regard as authoritative.

WM. A. RILEY

SCIENTIFIC BOOKS

A Manual Flora of Egypt. By Dr. RENO MUSCHLER, Assistant in the Royal Botanic Gardens, Dahlem-Berlin; Corresponding Member of the "Institut Egyptien," and others. With a preface by Professor PAUL ASCHERSON and Professor GEORG SCHWEINFURTH. Berlin, R. Friedländer & Sohn. 1912. Octavo, in two volumes. Pp. 12 + 1312.

The author tells us that "the history of botanical discovery in Egypt falls conveniently into two periods." These chronologically are (1) from 1761 to 1867, and (2) from 1867 to the present. In the earlier period we have Forskal's "*Flora Aegyptiaco-Arabica*" (1775), Delile's "*Flore d'Egypt*" (1813), Baker-Webb's "*Fragmenta Florulae Aethiopico-Aegyptiacae*" (1854), and in the later period, Schweinfurth's "*Beitraege zur Flora Aethiopiens*" (1867), Ascherson and Schweinfurth's "*Illustration de la Flore d'Egypt*" (1887), Volkens's "*Die Flora der Aegyptisch-Arabischen Wüste auf Grundlage anatomisch-physiologischer Forschungen*" (1887), Sicken-

berger's "*Contributions a la Flore d'Egypt*" (1908). To this list, of course, should be added Boissier's "*Flora Orientalis*" (1867-1888), covering a vastly larger field than Egypt.

The present work is the outgrowth of the labors of Ascherson and Schweinfurth, who "for some time already had decided upon the publication of a more adequate work dealing entirely with the Egyptian flora, but, owing to a great many more urgent tasks which took up all our time, we had to put off the realization of this plan from one year to another." Accordingly the labor of preparing the present work was entrusted to Dr. Muschler, who had at his disposal "the most extensive and best arranged collections ever made in Egypt."

In a chapter on Phytogeography and Geology in the appendix Egypt is divided into five regions, as follows: (I.) the Mediterranean Region, including the extreme northern area; (II.) the Nile-Delta Region, including the Delta proper at the north, and the Nile valley to Aswan near the Nubian frontier; (III.) the Oases of the Lybian Desert; (IV.) the Desert Region, including the Lybian, Isthmic, Northern and Southern Arabian deserts; (V.) the Red Sea Region. In the treatment of these regions many interesting botanical facts are brought out in connection with a discussion of their geological and physiographical features.

We may well quote several paragraphs in regard to the Desert Region:

The desert is characterized by a vegetation of fairly uniform character in its main features. The means whereby the existence of these desert plants is preserved reside rather in the peculiarities of their organization than in any specially favoring influences of the environment. The most prominent feature of this organization is the capacity which the vegetative organs have acquired to resist factors so inimical to life as heat and drought, factors whose common tendency is to annihilate all living things. Though the minute details of these multifarious protective arrangements are not visible to the naked eye, they find obvious expression in the external conformation of the various organs of the plants. Thin-stemmed

plants of delicate appearance have tubers or tuberous roots (*Erodium hirtum* and *Erodium arborescens*) sunk deep in the strong ground for the storing of reserves of nutriment adequate to maintain them alive through long months of absolute drought. The same end is gained in other delicate herbs by the possession of an enlarged woody basal portion. Then again, the tendency to general lignification through all the parts of the plants affords a capacity for resistance to many members of the families *Cruciferae* and *Compositae*, families known to us at home by their herbaceous, unprotected representatives. To restrict evaporation due to wind and solar radiation the desert flora exhibits a high degree of reduction in the surface area of its members. This principle is illustrated in numerous instances by poverty of foliage and considerable spininess, whilst in apparent contradiction of this tendency one often finds the surface of the plant clad in a hairy covering or with glands and superficial excretions of wax or resin or strongly aromatic substances. . . . Further we find plants with smooth or shiny, thick and fleshy, leaves. Nature does not work on one plane, but provides for every case special means of protection and fresh weapons to carry on the struggle. Side by side with the thorn-bristling *Zilla spinosa* we find the thick-leaved, wax-coated *Capparis spinosa*, whilst near by are the hedgehog-like *Astragalus* and *Fagonia*, and the soft, fleshy, fiberless *Mesembrianthemum*. In marked contrast, too, are the *Chenopodiaceae*, a similar almost leafless everlasting-woody throughout, and one would think indestructible—and the delicate *Parietaria* with its thin and battist-like foliage. Among the life-destroying agencies of the desert, the omnipresent salt should be mentioned.

Perennial plants are just about half as numerous as the delicate annuals. Their existence is independent of the fluctuating and variable annual winter rains. They shoot anew and blossom even after a rainless or all but rainless winter. In marked contrast are the annual herbs which depend absolutely upon the rainfall; nor is all rain of equal value in promoting their development. For a rich spring vegetation of annuals, the rain should fall about the end of February and the early part of March, at which time the growing heat of the sun is capable of promoting germination. Trees are hardly met with in the district.

As to the plants themselves, this flora presents some odd features. Thus we find only

one true fern (*Adiantum capillus-veneris*), and the only gymnosperms are two species of *Ephedra*. The grasses (*Gramineae*), legumes (*Leguminosae*) and composites (*Compositae*) are the larger families, there being 152 species of the first, and 175 of the second, and 188 of the third. The larger genera in these families are *Panicum* (14 sp.), *Aristida* (14), *Eragrostis* (9), *Bromus* (10), *Trigonella* (12), *Medicago* (16), *Trifolium* (15), *Lotus* (14), *Astragalus* (28), *Anthemis* (10), *Centaurea* (16). Of *Carex* there are only 3 species, and there are no orchids. Of *Rosaceae* there are 5 species, in as many genera. There is but one species of *Ericaceae*. There is no species of *Solidago*, nor even of *Taraxacum*.

The tree-producing genera with which we are familiar are mostly wanting, as *Quercus*, *Fagus*, *Acer*, *Ulmus*, *Fraxinus*, which are not represented, while *Salix* has 3 species, and *Populus* 1. Yet Egypt is not lacking in tree species, as witness the following list of genera, each represented by one species unless otherwise indicated: *Phoenix*, *Cocos*, *Hyphaene*, *Morus*, *Ficus* (3), *Acacia* (6), *Melia*, *Pistacia*, *Mangifera*, *Zizyphus* (2), *Rhamnus*, *Sterculia*, *Tamarix* (6), *Carica*, *Elaeagnus*, *Eucalyptus*, *Olea*, *Plumiera*, *Nerium*. Many readers will be surprised to learn that *Ricinus communis* (the castor bean) is "an evergreen, usually large shrub."

The foregoing will give some idea as to the interesting matter to be found in this important addition to systematic and ecologic botany.

CHARLES E. BESSEY

THE UNIVERSITY OF NEBRASKA

Gas-Engine Principles. With Explanations of the Operation, Parts, Installation Handling, Care and Maintenance of the Small Stationary and Marine Engine, and Chapters on the Effect, Location, Remedy and Prevention of Engine Troubles. By RODGER B. WHITMAN. Published by D. Appleton and Company, New York and London. 1912.

As stated on the paper cover, "'Gas-Engine Principles' is a guide for the user of the small stationary internal-combustion engine.